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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Toledo, OH 43604

EXAMINER
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FULLER, ERIC B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/744,420

Applicant(s)

SANDERSON, KEVIN DAVID

Examiner

Eric B. Fuller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4,6-22 and 34-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-22 and 34-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 15, 2005 has been entered.

### ***Response to Arguments***

Applicant argues that the amendment overcomes the rejections based on Proscia. This has been found convincing and the rejections have been withdrawn, in their present form, in the instant Office Action. However, the rejections have been amended to include the newly added limitations.

Applicant argues that because Tracey is a plasma CVD method, one would not look to it to modify Gallego or Riaz, which only teach CVD methods. This is not found convincing. First of all, the claims do not exclude plasma. Secondly, the processes still follow the same mechanisms. Using plasma simply provides energy to the system by a different means. A precursor suitable for plasma CVD would be suitable for CVD as long as obvious modifications were made to account for the lesser amount of energy resulting from the lack of plasma (i.e. higher deposition temperature).

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Lastly, the arguments, and concurrently filed declaration, do not provide motivation against looking to Tracey. They only recite additional benefits that are not explicitly taught by the references. However, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Using a less reactive species in order to reduce the amount of pre-reactions certainly flows naturally from the suggestion of the prior art. Therefore, these arguments have not been found convincing and the rejection based on Gallego and Riaz, both from the previous Office Action, have been maintained.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 6-9, 17-22, 34-37, and 40-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallego et al. (US 6,048,621) in view of Tracy et al. (US 4,687,560) and Florczak (US 6,268,019 B1).

Gallego teaches a process of coating a glass substrate during the float glass production process (column 3, lines 20-25) for forming a solar control glass (abstract) by

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first coating it with an underlayer of silicon, carbon, and oxygen (column 3, lines 40-45).

Then a layer of tungsten oxide, in a non-stoichiometric amount, is deposited on the underlayer (abstract, column 2, lines 24-33) with a thickness of 50 nm to 500 nm (column 2, lines 43-45). Then an overlayer of fluorine doped tin oxide is deposited upon that layer (column 3, lines 50-65). The reference teaches that the stoichiometry is altered by altering the flow of oxygen, but fails to teach the precursors for depositing the tungsten oxide layer.

However, as it has been shown above, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the precursors of Tracy in order to produce the tungsten oxide layer of Gallego. By doing so, one would have a reasonable expectation of success, as Tracy teaches the art recognized suitability of using tungsten chloride or tungsten for depositing tungsten oxides and Florczak teaches process parameters for depositing the equivalent precursors under atmospheric conditions.

As to claim 18, Gallego fails to teach the growth rate of the deposited film. However, to achieve maximum rate without sacrificing film quality would have been obvious and within the skill of one practicing in the art, absent evidence of criticality.

As to claim 43, Gallego teaches the multiple-glazing unit with the coated glass in spaced opposed relation to the glazing plane (column 4, lines 38-45).

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Claims 1, 2, 6-8, 10-16, 18, 23, 34-35, 38-42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riaz et al. (US 5,385,751) in view of Tracy et al. (US 4,687,560) and Florczak (US 6,268,019 B1).

Riaz teaches a method of coating a glass substrate (column 3, line 23) with a fluorine-doped tungsten oxide layer. The process may occur during the well-known float glass process (column 3, line 20). Riaz teaches that trifluoroacetic acid, as the fluorine source for doping, may be simultaneously added to a gas stream that comprises tungsten alkoxides and an oxygen source (column 2, line 54). Riaz also teaches a method of entraining the tungsten precursors where nitrogen is used as the carrier gas (column 3, lines 58-68).

The reference does not explicitly teach the use of the applicant's tungsten precursor. However, as it has been shown above, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the precursors of Tracy in order to produce the tungsten oxide layer of Riaz. By doing so, one would have a reasonable expectation of success, as Tracy teaches the art recognized suitability of using tungsten chloride or tungsten oxytetrachloride in place of tungsten hexafluoride in a CVD process for depositing tungsten oxides and Florczak teaches process parameters for depositing the equivalent precursors under atmospheric conditions.

As to claims 13, 16, 38, and 39, Florczak teaches the claimed substrate temperature (column 6, lines 45-50) and precursor temperature (column 4, lines 35-40).

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As to claim 18, Riaz fails to teach the growth rate of the deposited film.

However, to achieve maximum rate without sacrificing film quality would have been obvious and within the skill of one practicing in the art, absence evidence of criticality.

Claims 1, 2, 8, 10-14, 17, 19, 34, 38-40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Florczak (US 6,268,019 B1) in view of Proscia et al. (US 5,324,537), or vice versa, in view of Riaz (US 5,385,751).

Florczak teaches a method of coating a glass substrate with a fluorine-doped metal oxide layer (column 6, lines 55-65). The process may occur during the well-known float glass process (column 4, lines 50-29). Florczak teaches trifluoroacetic acid as the fluorine source for doping (column 4, lines 47-51). Oxygen sources are taught (column 4, lines 30-39). Substrate temperatures are taught (column 6, lines 45-50). The reference fails to explicitly teach depositing tungsten oxides.

Proscia teaches a method of forming fluorine doped tungsten oxide films that are applied to glass substrates during the float glass production process (column 2, lines 30-35). By doing so, a suitable solar control glass is formed (column 1, lines 25-31). A temperature range for the substrate is taught (column 3, lines 1-4). The precursor for the fluorine doping is taught (column 3, lines 33-42). The reference is silent to the precursors of the tungsten oxide film.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to deposit tungsten oxide by the method taught by

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Florczak, i.e. using tungsten as the metal in the metal chloride taught. By doing so, one would reap the benefits of achieving suitable solar control, as taught by Proscia.

It also would have been obvious to use the metal chloride precursors taught by Florczak in the process taught by Proscia. By doing so, one would have a reasonable expectation of success, as Proscia teaches a process, but is silent to the precursors, and Florczak teaches precursors to a similar process.

The combined references are silent to using an ester as the oxygen source. However, Riaz teaches the art recognized suitability for using an ester as the oxygen source in such a process. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use an ester in the process taught above. By doing so, one would have a reasonable expectation of success, as Riaz teaches the art recognized suitability of doing such.

Claims 1-4, 8, 10-14, 18, 34, 38 – 40, 42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Proscia (US 5,286,520) in view of Tracy et al. (US 4,687,560) and Florczak (US 6,268,019 B1), in further view of Riaz (US 5,385,751).

Proscia teaches a method of coating a glass substrate (column 4, lines 25-30) with a fluorine-doped tungsten oxide layer for producing solar control glass. The process may occur during the well-known float glass process (column 3, lines 45-50). Proscia teaches that trifluoroacetic acid, as the fluoride source for doping, may be simultaneously added to a gas stream comprising oxygen and tungsten hexafluoride



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(column 3, line 33). Proscia also teaches a method of entraining the tungsten precursors where nitrogen is used as the carrier gas (column 4, lines 13-22).

The reference fails to explicitly teach the use of a tungsten chloride or an oxyhalide as the tungsten precursor. However, Tracy teaches that either tungsten chloride or tungsten oxytetrachloride may be used as the precursor in place of tungsten hexafluoride for depositing a tungsten oxide film by CVD (column 5, lines 30-40). The pressure of the process taught by Tracy is significantly lower than the atmospheric pressure CVD method taught by Proscia. Therefore, in order to further prove that one would have a reasonable expectation of success, the examiner points to the teachings of Florczak. Florczak teaches an atmospheric pressure CVD method for depositing metal oxide coatings to float glass by decomposing metal chlorides (abstract). From the combined teachings of Tracy and Florczak, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize either tungsten oxytetrachloride or tungsten chloride as the precursor for the process taught by Proscia. By doing so, one would have a reasonable expectation of success, as Tracy teaches the art recognized suitability of using tungsten chloride or tungsten oxytetrachloride in place of tungsten hexafluoride in a CVD process for depositing tungsten oxides and Florczak teaches process parameters for depositing the equivalent precursors under atmospheric conditions. Florczak teaches the claimed substrate temperature (column 6, lines 45-50) and precursor temperature (column 4, lines 35-40).

As to claim 4, the reference fails to explicitly teach that the tungsten chloride is substituted. However, Tracy does teach that the precursor is either tungsten chloride or

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tungsten oxyhalide (column 5, lines 15-20). It is the examiner's position that one of ordinary skill in the art would recognize that by the reference teaching that the ligand of the tungsten precursor being capable of being either chloride or an oxyhalide, that it is implied that the oxyhalide substituent and the chloride substituent behave the same way in the reaction-deposition process. Therefore, it would have been obvious that if a tungsten precursor with a chloride ligand may be used, and a tungsten precursor with an oxyhalide ligand may be used, then one of ordinary skill in the art would have a reasonable expectation to believe that a tungsten precursor containing chlorides and oxyhalides as its ligands would succeed in performing the process as taught. To use the substituted precursor would have been obvious at the time the invention was made to a person having ordinary skill in the art with the expectation of achieving similar results, as discussed above.

As to claim 18, Proscia fails to explicitly teach the growth rate of the deposited film. However, to achieve maximum rate without sacrificing film quality would have been obvious and within the skill of one practicing in the art, absent evidence of criticality.

The combined references are silent to using an ester as the oxygen source. However, Riaz teaches the art recognized suitability for using an ester as the oxygen source in such a process. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use an ester in the process taught above. By doing so, one would have a reasonable expectation of success, as Riaz teaches the art recognized suitability of doing such.

**Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks, can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



EBF



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